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**Let’s Make Some DNA!**

Today we will be making our own DNA by looking at base pairs and replication. Use your knowledge of DNA structure and the rules of base pairing to make a simple, flat DNA model.

Materials:

* Modeling clay
* Toothpicks in 4 different colors
* Pop beads for amino acids
* Pipe Cleaners for tRNA

Directions

1. Work with a partner. Each group will make one set of models. Read the directions carefully, and answer the questions as you go. Every student must hand in individual answers to the lab questions.
2. Answer the lab questions in complete sentences, on a separate sheet of paper.

STEP 1.

* Roll out 2 pieces of clay about 12 inches long each to represent the sides of the DNA ladder

**QUESTION 1: What makes up these ladder sides in actual DNA?**

Step 2.

* Use the colored toothpicks to setup 15 base pairs. Follow the base pairing rules, and use the following color scheme: adenine, thymine, guanine, cytosine
* Make the 4th, 5th, and 6th bases on one side ATG, and the last set on the same side TGA. You will find out why later.

**QUESTION 2: This DNA model is 15 base pairs long- how long would a real DNA molecule be?**

Step 3.

* “Unzip” your DNA molecule by carefully separating the two sides.
* Have each lab partner create a new strand of DNA by using one of your pieces as a template- be sure to follow base pairing rules!
* When you are finished, place your models on a tray labeled with your names for use in the next lab on RNA

**QUESTION 3: What DNA process are you mimicking with this activity? Why does this need to happen?**

**QUESTION 4: What phase would a cell be in when this happens?**

**QUESTION 5: What is the role of DNA polymerase in this process?**

**QUESTION 6: How does DNA know where to start this process?**

**QUESTION 7: Count the number of each type of base you used. Then calculate the ratio of adenine to thymine, and guanine to cytosine in your model. Why is this particular ratio important?**